2004 SIP Summit

Consumer Products

January 14, 2004

Outline

- Background
- Existing Measures
- Consumer Products VOC Emission Inventory
- SIP Measures
- How Can We Achieve Further VOC Reductions?
- Other Possible Measures
- Summary

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What Are Consumer Products?

- Chemically formulated products
- Used by household and institutional consumers
- Includes household, aerosol paint, personal care, automotive care products, etc.
- Comprised of hundreds of categories

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Requirements

- **California Clean Air Act requires**
  - Maximum feasible reduction in VOCs emitted by consumer products
  - Technologically and commercially feasible regulations
  - Preserve product forms
- **SIP commitments**
- **SIP lawsuit settlement agreement**

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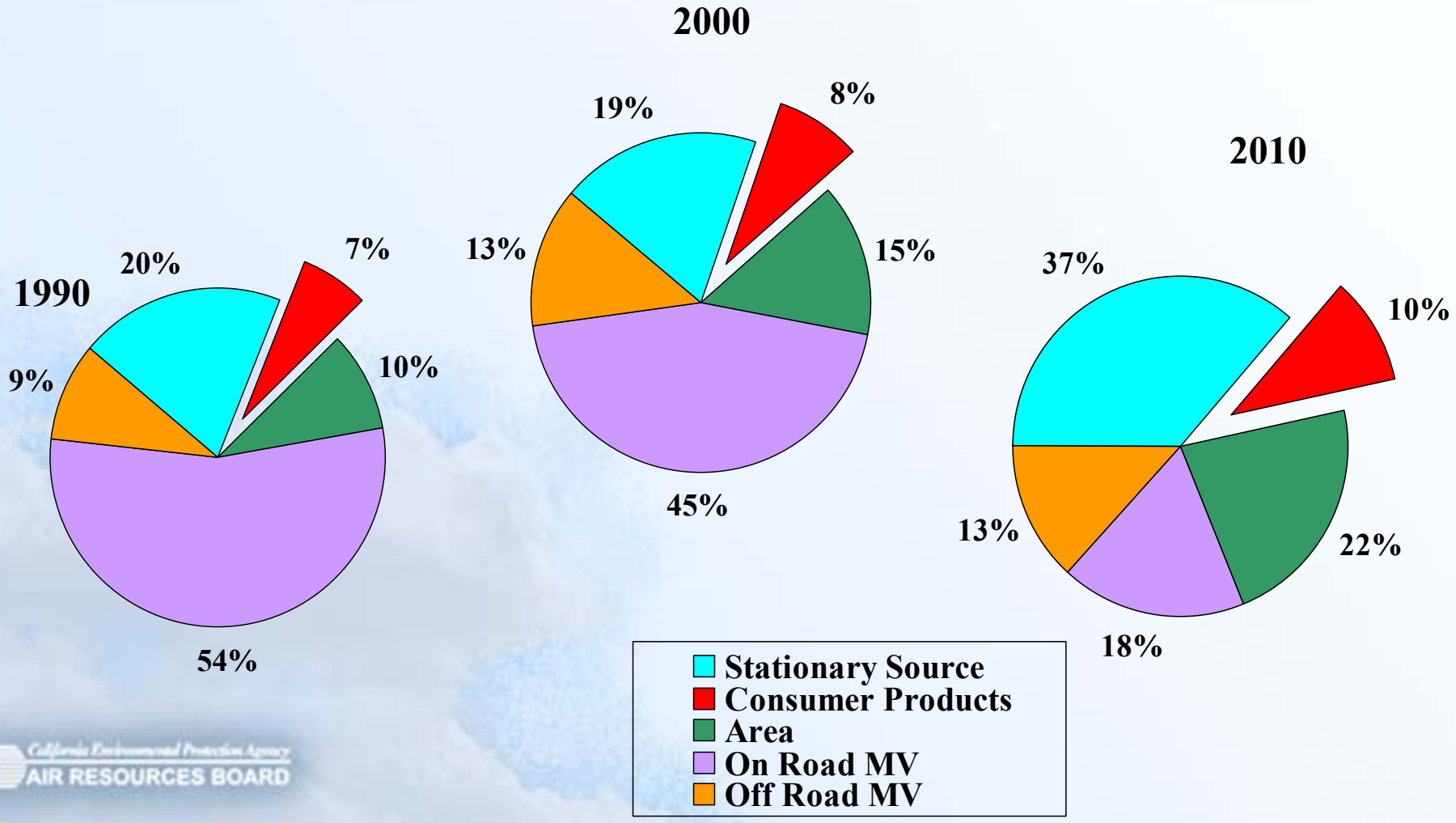
Existing Measures

- Five regulations adopted
- VOC limits for 83 categories of products
- Achieved 130 tons per day (tpd) of emission reductions
- Regulated category emissions reduced by 50%
- Overall, emissions reduced by 40%

Existing Measures (con't.)

- **Prohibition on use of Perchloroethylene, Methylene Chloride & Trichloroethylene in:**
  - Aerosol Adhesives
  - Aerosol Coatings
  - Brake Cleaners
  - Carburetor and Fuel Injection Intake Cleaner
  - Engine Degreaser
  - Automotive General Purpose Degreasers
- **Track use for other products**

Statewide Consumer Products Emissions 1990 - 2010



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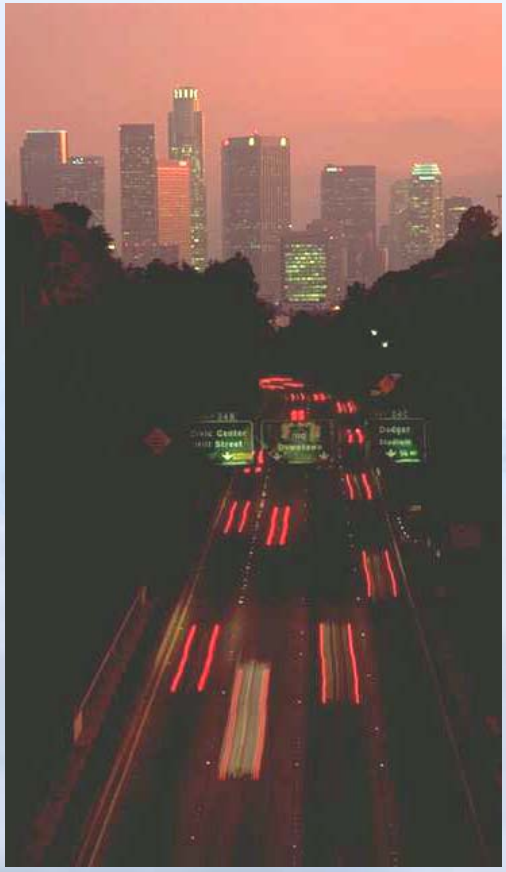
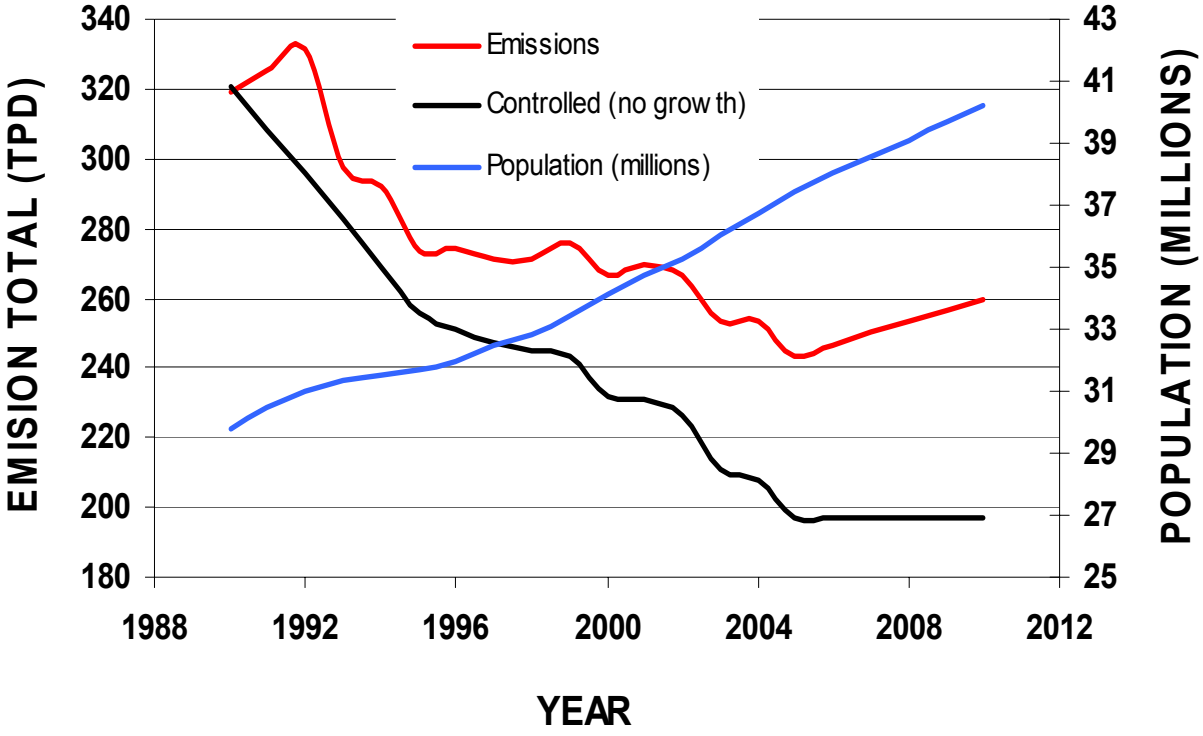
Population Growth Erodes Benefits of Program





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Largest Emitting Categories

- 21 categories with emissions over 2 tpd
- Two-thirds of total consumer product emissions
- 17 of the 21 are regulated
- 160 tpd emissions in 2010
- Achieved approximately 40% reduction from these categories
- Additional reductions included in current SIP commitment
- Many categories subject to multiple rulemakings

21 Largest VOC Emitting Categories -- 2010

Category	CA Emissions (tpd)	# of Times Regulated
Hair Spray	35	2
Multipurpose Solvents	19	0
Rubbing Alcohol	13	0
Fragrance (<20%)	10	2
General Purpose Cleaners	9	2
Disinfectants	8	0
Paint Removers	8	1
Brake Cleaners	7	2
Non-Flat Aerosol Paints	7	2
Carb and Choke Cleaners	5	2
Charcoal Lighter Fluids	5	1

21 Largest VOC Emitting Categories – 2010 (cont'd)

Category	CA Emissions (tpd)	# of Times Regulated
Dual Phase Air Fresheners	5	2
Glass Cleaners	4	3
Multipurpose Lubricant	4	1
Solid/Gel Air Fresheners	4	1
Insect Repellants	3	1
Caulking Compounds	3	1
Antiperspirants	3	2
Astringents	3	0
Floor Wax Strippers	2	2
Furniture Wax and Polish	2	2

Multipurpose Solvents

- Category was recently surveyed
- Currently analyzing category, breaking up in to logical sub-categories
- Evaluating emissions for setting limits in 2004 rulemaking

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Rubbing Alcohol

- Emissions of 13 tpd
- Medical uses and health benefit
- Most products formulated to about 70% isopropanol in water
- Maximum antimicrobial efficacy achieved at 70%
- No clear reformulation option at present

Disinfectants

- **Emissions of 8 tpd**
- **Health benefit products**
- **Reformulation must maintain product antimicrobial and antiviral efficacy**

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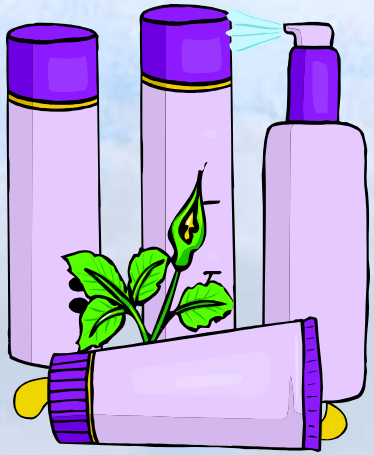
Astringents and Toners



- Emissions of 3 tpd
- Medicated products included in category
- Planned for rulemaking in 2005/2006

Medium-sized Categories

- 20 categories with VOC emissions between 1 and 2 tpd
- 18 currently regulated, many subject to multiple limits
- Emissions are about 30 tpd
- Examples are penetrants, windshield washer fluids, and engine degreasers
- Achieved approximately a 70% reduction from these categories
- Being assessed for further reductions

Smaller Categories

- About 70 categories with VOC emissions between 0.1 and 1 tpd
- Total emissions about 34 tpd
- Examples are hair mousses, shaving gels, and fabric protectants
- Achieved approximately a 45% reduction from these categories
- Being assessed for further reductions
- Some categories being evaluated for the 2004 rulemaking

Very Small Categories

- Hundreds of categories with emissions less than 0.1 tpd
- Examples are tooth paste, eye liners, crayons, etc.
- Emissions are approximately 25 tpd
- Evaluating how to address these categories

SIP Measures

- **Near-term**
  - Three surveys in 2003, 2004, and 2006
  - Three rulemakings in 2004, 2006, and 2008
  - 25 - 40 tpd VOC reductions statewide
  - Evaluate further reductions in near-term
  - All reductions realized by 2010
- **Long-term**
  - Consider future consumer products regulations

VOC Limit Development Process

- Public process with stakeholder involvement
- Regular surveys
- Evaluation of current technology
- Emerging technologies and technology transfer

VOC Limit Development Process (cont'd.)

- **Economic Impacts**
  - Cost to Reformulate
  - Cost to Consumers
- **Environmental Impacts**
  - Evaluate Air Toxics Impacts
- **Effective Date**

Emission Reduction Strategies Evaluated

- Emerging technologies
- Exempt VOC compounds
- Use of water
- Other non-VOC ingredients
- Photochemical reactivity

Emerging Technologies

- **Delivery Systems**
  - Spray technology
    - Propellants
  - Metered spray rates
  - Foam forming technology

Emerging Technologies (cont'd.)

- **Packaging Systems**
  - Barrier Packs
  - Other Alternatives

Exempt VOC Compounds

- **Several VOCs granted "VOC exemption" due to negligible or lower reactivity in the atmosphere**
- **Examples:**
  - Acetone
  - HFC 152a
  - Methyl acetate
  - Volatile methyl siloxanes

Use of Water

- Inorganic solvent
- Number 1 ingredient in consumer products
- Water with small amount of surfactants yields effective cleaning products
- Water and VOC emulsions "mimic" higher VOC products

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Other Non-VOC Ingredients

- Alkaline compounds
- Hydrogen peroxide

Photochemical Reactivity

- Measure of amount of ozone formed from reaction of an individual VOC in the atmosphere
- Requiring use of "lower reactive" VOCs provides ozone reduction benefit
- Strategy currently used in aerosol coatings

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Reformulation Challenges

- VOCs are “actives” or “carry” active ingredients
- Commercial and technological feasibility must be preserved
- Avoid increasing use of TACs

Other Possible Measure

- Removal of product form constraint (would require legislation)
- Could lead to 10 tpd reduction above current commitment

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Summary

- Despite significant reductions to date, consumer products continue to be a significant emissions source
- SIP commitment to achieve 25-40 tpd by 2010
- After SIP measures are implemented, 2010 emissions from consumer products will be approximately 220 to 235 tpd
- Will continue to pursue opportunities for further reductions which may require innovative approaches